

43. On a further Collection of Mammals from the Inner Hebrides. By IVOR G. S. MONTAGU, F.Z.S.

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(Text-figure 1.)

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(Measurements in the Tables are in millimetres throughout.)

The recent description of Hebridean mammals by G. E. H. Barrett-Hamilton and M. A. C. Hinton in P.Z.S. 1913*(1), in 'A History of British Mammals' (2), and in Ann. & Mag. Nat. Hist. 1913 (3), and by M. A. C. Hinton in Ann. & Mag. Nat. Hist. 1914 (4), neither completely exhausted the subject nor, in most groups, sought to make any definitive summary. Of the three wild genera most abundantly distributed in the Hebrides—*Sorex*, *Apodemus*, and *Microtus*,—only *Apodemus* has been the subject of a detailed review, which, owing to paucity of material, was of necessity left indeterminate as far as certain islands were concerned. Valuable results were accordingly to be expected from the examination of further mammal material from these localities, and for this reason it was thought desirable to extend the scope, originally of an entomological character, of a private expedition to the Inner Hebrides undertaken by some students at Cambridge University, to include the collection of mammals; specimens, described in this paper, were thus obtained on Islay and Jura by I. G. S. Montagu, and on Gigha by G. E. Hutchinson and G. L. R. Hancock. The results achieved by the inspection of this and other material in the British Museum collection have cleared up several of the indeterminate points in (4), have shown the existence of certain forms of *Sorex araneus* which have an interesting bearing on the history of the species, and have pointed the way to a thorough revision of the British forms of *Microtus*. It should be noted that, again, in the case of no group is a definitive summary attempted; a final view of the relationships of such a group as that treated in this paper is, in the writer's opinion, only possible when forms from all the islands inhabited by that group have been examined. Accordingly the

* (1) "On a Collection of Mammals from the Inner Hebrides," P. Z. S. 1913.

(2) 'A History of British Mammals,' Gurney & Jackson, 1912-19.

(3) "Three new Voles from the Inner Hebrides, Scotland," A. M. N. H. 1913.

(4) "Notes on British forms of *Apodemus*," A. M. N. H. 1914.

plan here adopted has been the tentative indication of these relationships without final systematic grouping.

It should be noted here that the work of collection in the Inner Hebrides was greatly facilitated by the invariable courtesy of the inhabitants.

The writer further takes this opportunity to express his thanks to M. A. C. Hinton, without whose generous advice the results here described would largely have lacked their comparative value.

Review of Sorex araneus forms from the Inner Hebrides.

The satisfactory description of the characters of the Hebridean Common Shrews involves a general survey of those of Great Britain and of the most nearly related Continental forms.

Form.	Dorsal Colour.	Ventral wash.	Size.	p ² .
<i>S. a. araneus.</i> Continental	Dark.	Pale to dark.	Various.	Present.
<i>S. a. castaneus.</i> British Southern	Light.	Pale to dark.	Large.	Present.
<i>S. a. castaneus.</i> Scottish Highland	Light.	Pale to dark.	Small.	Present.
Jura shrew	Dark.	Pale.	Small.	Present.
Gigha shrew	Dark.	Pale.	Small*.	Present.
Islay shrew	Dark.	Absent.	Large.	Absent.

* With large cranial characters.

It will be seen from the above table that no character can be cited to distinguish the Jura and Gigha shrews from some specimens of the Continental form. Continental *S. a. araneus* includes forms exhibiting distinct local variation from the typical; a small form ranges from Denmark, through Northern Germany and the Netherlands, into France; the large typical form is found not only in Scandinavia but in Southern and Eastern Germany; shrews from the Harz Mountains and from South-Eastern Norway show a light ventral surface, the former thus resembling the Jura and Gigha forms in both size and colour. It should, moreover, be noted that the typical form of *S. a. castaneus* is to be found only in the southern parts of Great Britain, the shrew of the Scottish Highlands being readily distinguishable from it by its generally smaller size and smaller skull. These forms all deserve systematic separation; subspecific status, however, would undoubtedly obscure their relationships in such a manner as to render their present recognition inadvisable. It follows that the revision and satisfactory arrangement of European shrews, as that of any other thoroughly examined group, is impossible without a quadrinomial nomenclature. In the absence of such a nomenclature the writer is unprepared to make, and would certainly regard as unsatisfactory, an attempt to distinguish systematically the forms of Jura and Gigha from *S. a. araneus*. In a similar manner the maintenance of specific status for the Islay shrew obscures its relationships, and the writer accordingly reduces its status to a subspecific one.

It may be noted as an interesting circumstance that the neighbouring Highland form of *S. a. castaneus* is approached in size most closely by the shrew of the island most recently separated from the mainland, Jura, and least by that of the longest separated, Islay. This coincides with the view that smallness in *S. araneus* is a modern character, developed in Scotland, for example, since the separation of Islay from the mainland. Similarly, light dorsal coloration might be regarded as yet more modern, developed throughout Great Britain since the separation of Jura. That largeness in the group is primitive is confirmed by fossil evidence, which can, however, obviously throw no light on the question of ancestral colour. The view that dorsal lightness is primitive in Common Shrews has been considered to be supported by its universal presence in young specimens. If, however, this latter view be correct, the Jura and Gigha shrews must have an unusual history; on the one hand they may be regarded as convergent forms, strikingly parallel with Continental *S. a. araneus*; on the other hand they must be regarded as representatives of a successful modern group, which, having excluded the older light group from the European mainland, has itself, in part, been excluded from the British mainland. The improbability of both these assumptions encourages the statement that the description of the Jura and Gigha shrews tends to confirm the view that dorsal lightness in *S. a. castaneus* is a secondary development from a dorsal clove-brown condition; this view is perhaps supported by the fact that, even in *S. a. castaneus*, the young coat is of a slightly lighter tint than is that of the average adult.

Sorex araneus araneus Linnæus.

Sorex araneus castaneus Barrett-Hamilton & Hinton, P. Z. S. 1913, p. 823 (1).

Material examined and Dimensions. Six adults (3 ♂, 3 ♀) collected by Sheppard in May 1912 in Jura. Five adults (2 ♂, 3 ♀) and six young adults (3 ♂, 3 ♀) collected by Hutchinson in June and July 1922 in Gigha.

JURA.		HB.	T.	HF.
Average of six adults		72.5	35.3	12
GIGHA.				
2.	Adult ♂, 30.6.22.	70	37	13
5.	" ♂, 30.6.22.	76	40	14
6.	" ♀, 30.6.22.	70	32	11.5
11.	" ♀, 2.7.22.	71	34	12.5
15.	" ♀, 3.7.22.	77	37.5	12
1.	Young adult ♂, 30.6.22.	62	35*	12
10.	" " ♂, 2.7.22.	63	37	13
14.	" " ♂, 3.7.22.	66.5	34	12
3.	" " ♀, 30.6.22.	71	39.5	13
4.	" " ♀, 30.6.22.	68.5	38	12
7.	" " ♀, 1.7.22.	59	36	12
Average of five adults		72.8	38.3	12.6

The term "young adult" is applied to specimens in the light summer coat, their feet being abundantly clothed with hair.

* Tail damaged in trap.

Description. Both these forms exhibit a dark, clove-brown, dorsal coloration and a light ventral surface with traces of pale wash; they are thus indistinguishable in appearance from certain specimens of Continental *S. a. araneus*. In size (head-and-body and condylobasal lengths) they resemble the neighbouring Highland *S. a. castaneus* in being small. The Gigha form, however, has large cranial and jaw measurements not usually associated with small length of skull. This may represent a secondary development, or may represent certain survived characters from the primitive general largeness. The sum of these characters indicate that the Jura and Gigha shrews exhibit considerably more affinity with *S. a. araneus* than with *S. a. castaneus*, and it would certainly be incongruous to leave them with the latter group. While they exhibit sufficiently distinct combinations of characters to justify separate recognition, the writer does not propose, for reasons stated elsewhere, to obscure their relationships by systematising them as subspecies.

SOREX ARANEUS GRANTII Barrett-Hamilton & Hinton.

Sorex grantii Barrett-Hamilton & Hinton, P. Z. S. 1913, p. 824 (1).

Habitat. Islay.

New Material examined and Dimensions. Five adults (2 ♂, 3 ♀), one young adult (♀), and one aged specimen (♂) collected by Montagu in June 1922.

	HB.	T.	HF.
8. Adult ♂, 18.6.22.	74	37	12
11. „ ♂, 18.6.22.	66	35	12
3. „ ♀, 17.6.22.	72	31	12
7. „ ♀, 18.6.22.	77	37	12
9. „ ♀, 18.6.22.	76	38	11.5
15. Young adult ♀, 21.6.22.	72	40	12
12. Aged ♂, 19.6.22.	60	39	13
Average of 1922 adults (5)	73	35.6	11.9
„ of all adults (23)	76.15	35.9	12.45

Description. The new specimens of this form confirm the description by Barrett-Hamilton and Hinton in (1). An examination of all specimens gives the following figures:—

p^2 present on both sides in 10 specimens, 45 p.c. of those examined.
 „ „ „ one side „ 5 „ 23 „ „ „
 „ „ „ both sides „ 7 „ 32 „ „ „

No. 12 is a most remarkable specimen, the discovery of which has an important bearing on the bionomics of the shrew. L. E. Adams collected data, his interpretation of which has been generally accepted, demonstrating that *S. a. castaneus* is an

annual, each generation surviving about eighteen months. Thus, according to this hypothesis:—

In spring and early summer of year x there are present adults of year $x-1$ and young of year x being produced.

In late summer and autumn of year x there are present young adults of year x and adults of year $x-1$ dying off.

In winter of years x — $x+1$ there are only adults of year x generation.

The abundant data in support of this view need not be recapitulated, suffice it to say that all winter specimens were found to be indistinguishable in point of age, and that no really aged specimen had hitherto been examined. This theory was extended to embrace many other European shrew forms. No. 12, however, is undoubtedly above normal age; the teeth are almost completely worn away, the dorsal black and the ventral silver coats are grizzled. No specimen like it is in the British Museum collection, nor has one been recorded. It should be noted that the proportion (1/29th) of examined *S. a. grantii* specimens that this individual represents does not encourage the view that there is a tendency to longevity in the subspecies, but causes one to regard its occurrence as being as exceptional as in *S. a. castaneus*.

In reducing the status of this form to a subspecific one the writer is following the method of Barrett-Hamilton and Hinton, who, on p. 432 of (2), write: "This mouse (*M. a. macgillivrayi*) might well be called a species were it not that the subspecific name indicates its relationships." From this point of view specific status was, in the first place, incongruous for the Islay shrew, and the necessity for systematising it as a subspecies of *S. araneus* has been enhanced by the description of the shrews from Jura and Gigha, the characters of which emphasize the relationships of the Islay form. It should be added that this view is acceptable to M. A. C. Hinton.

SOREX MINUTUS MINUTUS Linnæus.

Material examined and Dimensions. One adult (♀) collected by Montagu in June 1922 in Jura.

	HB.	T.	HF.
17. Adult ♀, 23.6.22.	59	38*	11
Average of sixteen adults from the Inner Hebrides (1)	55.5	35.4	10.1

* Tail damaged in trap.

Description. This shrew has now been reported in the Hebrides from Lewis, N. Uist, Benbecula, S. Uist, Barra; Skye, Sanday, Eigg; Coll, Tiree; Islay, Jura, Gigha; Great Cumbrae, Arran, Bute. It had not hitherto been reported from Jura. The present specimen, it should be noted, is noticeably large in all dimensions.

Sorex skull dimensions.*Sorex araneus araneus*.

JURA.	Cbl.	Mb.	Bbc.	Dbc.	M.
Average of three specimens	18.50 (2)	5.15	9.10 (2)	4.85 (2)	9.34
GIGHA.					
5. Adult ♂	18.39	5.64	9.66	5.23	9.68
15. " ♀	18.62	5.38	6.60	5.35	9.62
7. " Young adult ♂	18.44	5.36	9.50	5.33	9.73
Average of eight specimens	18.55 (4)	5.39	9.56 (4)	5.30 (3)	9.74

Sorex araneus grantii.

ISLAY.					
8. Adult ♂	18.71	5.30	9.27	5.23	9.65
11. " ♂	18.81	5.42	9.24	5.40	9.57
3. " ♀	19.06	5.65	9.50	5.33	9.82
7. " ♀	19.22	5.38	9.22	5.16	9.70
12. Aged ♂	18.98	5.50	9.77	5.00	9.76
Average of nineteen specimens ...	18.85 (18)	5.32	9.26 (16)	5.15 (18)	9.65

Sorex minutus minutus.

JURA.					
17. Adult ♀	15.94	4.33	7.45	4.35	7.89

Notes on Apodemus.

Hinton remarks, on p. 119 of (4), that "in practically every island of the Hebrides, differentiation from the parent stock has proceeded so far that the most logical course would be to describe the mice of each island as a distinct subspecies." In his paper, however, lack of abundant material compelled him temporarily to group the mice of Ghia and Tiree with those of Great Cumbrae as *A. h. cumbrae*, and the mice of Jura and Islay with those of Mull as *A. h. macleani*. The distinguishing characters he observed in them are well confirmed by the extended series now available, and others are made apparent; there is left no doubt of the distinct nature of each, which is accordingly here separated.

APODEMUS HEBRIDENSIS TIRÆ, subsp. n.

Apodemus hebridensis cumbrae Hinton, A. M. N. H. 1914, p. 128 (4).

Habitat. Tiree.

Material examined and Dimensions. Four adults (3 ♂, 1 ♀) collected by Sheppard in July 1912.

	HB.	T.	HF.	E.
Type 150. Adult ♀, 13.7.12.	100	88	22	13.5
Average of all adults (4)	102.5	84.25	23.1	13.5

Description. In general dorsal colour this form nearly resembles *A. h. cumbrae*; the flanks are slightly less bright than those of *A. h. cumbrae*, and are little lighter than the back. The contrast between flanks and belly is not striking; the latter is silvery, with slight trace of the pectoral spot.

The size of this form is greater than that of the other rufous mice, *A. h. cumbræ* and *A. h. ghia*, with which it was formerly associated. The tails are short, and the ears are considerably shorter than those of other forms of *A. hebridensis*.

The only complete skull available, though that of an old specimen, is noticeably small. The dimensions indicate a broad rostrum like that of the Sodor (Gigha, Jura, Islay) forms, and a peculiar long, narrow nasal; in other proportions the skull seems fairly to resemble that of the Cumbræ form.

Apodemus hebridensis ghia, subsp. n.

Apodemus hebridensis cumbræ Hinton, A. M. N. H. 1914, p. 128 (4).

Habitat. Gigha.

Material examined and Dimensions. One adult (♀) collected by Sheppard in May 1912. Three adults (♂) collected by Hancock and Hutchinson in July 1922.

	HB.	T.	HF.	E.
8. Adult, 1. 7. 22.	94	89	23	14.5
<i>Type</i> 4. „ 2. 7. 22.	92	95	23	15.5
7. „ 3. 7. 22.	97	88*	25	15
Average of all adults	95.75	89.7	23.4	15

* Tail damaged in trap.

Description. The black dorsal hairs are distributed, not so as to dull the general colour from rufous to brown as in the Mull, Islay, Jura, and typical *A. h. hebridensis* forms, but in more definite splashes; thus the back remains rufous with black spangled more abundantly in a median position than on the flanks. There is bright contrast between the flanks and the silvery belly, the line of demarcation being distinct. The pectoral spot is slight, though more distinct than in *A. h. cumbræ* and *A. h. tircæ*.

The appendage measurements correspond to those of *A. h. cumbræ* and the typical form.

The skull measurements, when compared with those of *A. h. cumbræ*, indicate a relatively small zygomatic breadth, cranial width, and coronal cheek-teeth length. In these measurements the skull of *A. h. ghia* more closely resembles that of the Islay than that of the Cumbræ form.

Apodemus hebridensis tural, subsp. n.

Apodemus hebridensis maclean Hinton, A. M. N. H. 1914, p. 130 (4).

Habitat. Islay.

Material examined and Dimensions. Seven adults (2 ♂, 5 ♀) collected by Sheppard in May and August 1912, two adults (?)

in the Royal Scottish Museum, and four adults (3 ♂, 1 ♀) and one young specimen (♂) collected by Montagu in June 1922.

	HB.	T.	HF.	E.
Type 2. Adult ♂, 17. 6. 22.	91	91	25	15
4. „ ♂, 18. 6. 22.	97	98	26	16
14. „ ♂, 20. 6. 22.	98	89	23	14
5. „ ♀, 18. 6. 22.	91	88	24	16
1. Immature ♂, 16. 6. 22.	62	62	24	14
Average of 1922 adults (4).....	94.25	91.5	24.5	15.25
„ „ all adults (13)	93.6	84.6	23.1	14.4

Description. This form well resembles *A. h. maclean* in general colour; there is, however, less contrast between the back and flanks, the latter being distinctly more rufous than the lighter flanks of *A. h. maclean*. The ventral surface is silvery and the pectoral spot even less distinct than in *A. h. maclean*.

The appendage measurements of Sheppard have often been found to require revision, and the fact that in this case they do not agree with those of Montagu indicates that too much reliance should not be placed on them. There can, accordingly, be little doubt that the ears of Islay mice are longer than those of the Mull form, with which they were formerly associated. The tail, also, like that of the Cumbrae, Gigha, and Jura mice, is noticeably longer than that of the Mull and typical *A. h. hebridensis* forms. The hind feet, far from being small as suggested on p. 130 of (4), are extremely large; it may be noted that in the young specimen the hind foot is equal to 40 per cent. of the head and body length.

The measurements of the recently collected skulls largely confirm the differences noted by Hinton in comparing this form with *A. h. maclean*. The skull of *A. h. tural* is to be distinguished from the latter by its greater zygomatic and interorbital breadths, broader and deeper brain-case, rather larger bullæ, and broader rostrum and masseteric plate.

APODEMUS HEBRIDENSIS LARUS, subsp. n.

Apodemus hebridensis maclean Hinton, A. M. N. H. 1914, p. 130 (4).

Habitat. Jura.

Material examined and Dimensions. Three adults (2 ♂, 1 ♀) collected by Sheppard in May 1912, and two adults (♀) collected by Montagu in June 1922.

	HB.	T.	HF.	E.
Type 123. Adult ♂, 18. 5. 12.	100	59*	23	14.5
19. „ ♀, 26. 6. 22.	86	75	23	15.5
20. „ ♀, 26. 6. 22.	84	94	23	15.5
Average of all adults (5)	92.6	83.7	22.8	14.8

* Tail damaged in trap.

Description. This form resembles *A. h. tural* in general colour, but is dorsally darker, being the darkest form of *A. hebridensis*; the dark hairs are distributed evenly, though more abundant in a median position. The ventral surface is silvery and the pectoral spot is faint.

The appendage measurements resemble those of *A. h. tural*, the ears being longer than those of *A. h. maclean*.

Like *A. h. tural* the skull measurements resemble those of *A. h. hebridensis* and differ from those of *A. h. maclean* in showing larger zygomatic, interorbital, and cranial breadths, larger cranial depth, and broader rostrum and masseteric plate. The skull, however, resembles that of *A. h. maclean* and differs from that of *A. h. tural* in the smallness of its bullæ; further, it shows a peculiarly large width of the incisive foramina.

Apodemus skull dimensions.

No.	(3) Gt. Cumbræ. <i>A. h.</i> <i>cumbræ.</i>	(2) Tirree. <i>A. h.</i> <i>tiræ.</i>	(2) Gigha. <i>A. h.</i> <i>ghia.</i>	(8) Islay. <i>A. h.</i> <i>tural.</i>	(4) Jura. <i>A. h.</i> <i>larus.</i>	(3) Mull. <i>A. h.</i> <i>maclean.</i>
1.	23·16	22·70	24·36	23·53	23·84	23·73
1 <i>a.</i>	100	100	100	100	100	100
2.	110·75	110·00	107·90	109·36	109·40	109·83
3.	56·56	56·00	53·40	54·20	54·65	53·03
4.	16·80	17·40	17·60	17·69	17·50	17·28
5.	51·00	50·50	48·20	48·66	49·38	48·26
6.	35·60	35·50	35·72	35·13	34·99	34·06
7.	45·56	46·30	46·20	45·78	46·03	45·90
8.	26·60	26·45	26·37	26·39	25·81	25·93
9.	40·23	42·10	39·45	40·05	40·85	41·80
10.	11·91	11·70	11·90	11·97	12·08	11·93
11.	54·33	55·95	55·90	54·34	54·65	54·03
12.	28·90	28·65	29·08	29·34	29·47	29·90
13.	23·56	24·70	22·22	23·40	24·09	24·70
14.	7·46	7·73	8·66	8·13	9·09	6·86
15.	18·96	19·80	19·62	19·30	19·94	18·83
16.	10·66	10·35	11·41	10·77	11·89	10·26
17.	16·25	16·25	16·02	15·92	16·22	16·05

Number in () of skulls on which averages are based.

- | | |
|---|--|
| 1. Condylbasal length: average in millimetres. | 8. Condyle to front surface of bulla. |
| Reductions:— | 9. Nasal length. |
| 1 <i>a.</i> Condylbasal length equals 100. | 10. Nasal width. |
| 2. Occipitonasal length. | 11. Palatal length. |
| 3. Zygomatic breadth. | 12. Diastema. |
| 4. Interorbital constriction. | 13. Length of incisive foramina. |
| 5. Cranial width. | 14. Width of incisive foramina. |
| 6. Cranial depth, in middle. | 15. Rostral breadth. |
| 7. Postmolar length; condyle to <i>m</i> ₃ . | 16. Width of masseteric plate (least). |
| | 17. Cheek-teeth, coronal length. |

MUS MUSCULUS MUSCULUS Linnæus.

Material examined and Dimensions. Three (2 ♂, 1 ♀) collected by Montagu in June 1922 in Islay, and one (♂) collected by Montagu in June 1922 in Jura.

ISLAY.	HB.	T.	HF.	E.
10. Adult ♂, 18. 6. 22.	82	82	18	13
13. „ ♂, 20. 6. 22.	78	76*	17	13
6. „ ♀, 18. 6. 22.	75	75	17	10
JURA.				
18. Adult ♂, 25. 6. 22.	71	71	17.5	13

* Tail damaged in trap.

Description. All the specimens, which were trapped in fields, are in the yellowish outdoor pelage.

Review of the British forms of Microtus agrestis.

Definitions of various subspecies of *M. agrestis* have appeared from time to time (1, 2, 3) describing forms from the Hebrides and from the Scottish mainland. These definitions, however, have been written not by the same person, and often without facilities for surveying the whole material from all these localities; the existing descriptions accordingly lack comparative value in some respects, such as character of fur; for such characters are largely incapable of reference to other than subjective standards. The writer therefore gives here, in tabular form, a comparison of the various types of fur recognised as peculiar in British *M. agrestis* forms.

No.	TYPICAL.	ISLAY.	GIGHA.	EIGG.	MUCK.
1.	Intermediate.	Sleek.	Shaggy.	Shaggy.	Shaggy.
2.	Soft.	Soft.	Harsh.	Soft.	Soft.
3.	Rufous.	Rufous.	Rufous.	Rufous.	Rufous.
4.	12	10	14	14	14
5.	2	2	2	2	2
6.	General.	General.	Abundant.	General.	General.
7.	16	16	16	16	16
8.	Irregular yellow.	Uniform dark grey.	<i>a</i> and <i>b</i> .	Uniform white.	More uniform yellow.
9.	6	6	6	6	6
10.	Grey, 2	Grey, 2	Grey, 2	White, 2	Grey, 2
11.	8		8		8
12.	Pale, 2		Bright, 2		Pale, 2

a, irregular yellow; *b*, uniform dark grey.

Dorsal fur characters:—

1. Appearance.
2. Texture.
3. General colour.
4. Coloured hair, length grey bases.
5. „ „ „ coloured tips.
6. Black hair, distribution.
7. „ „ length.

Ventral fur characters :—

8. General colour.
9. Short hairs, length grey bases.
10. " " " and colour tips.
11. Longer hairs, length grey bases.
12. " " " and colour tips.

Muck, *M. a. luch*; Eigg, *M. a. mial*; Gigha, *M. a. fiona*; Islay, *M. a. macgilivraii*; Typical, *M. a. exsul*; N. Uist, S. Uist, Jura, Arran, Mull, *M. a. neglectus*; Mainland, Bute.

An examination of the skulls from all the localities visited leads to the conclusion that the present systematic grouping, based on the degree of reduction of the 4th inner angle of *m*₁, is an inaccurate one. This character is one which, seldom constant even locally, varies very readily, and undoubtedly its variation does not correspond with degree of differentiation in other

Text-figure 1.

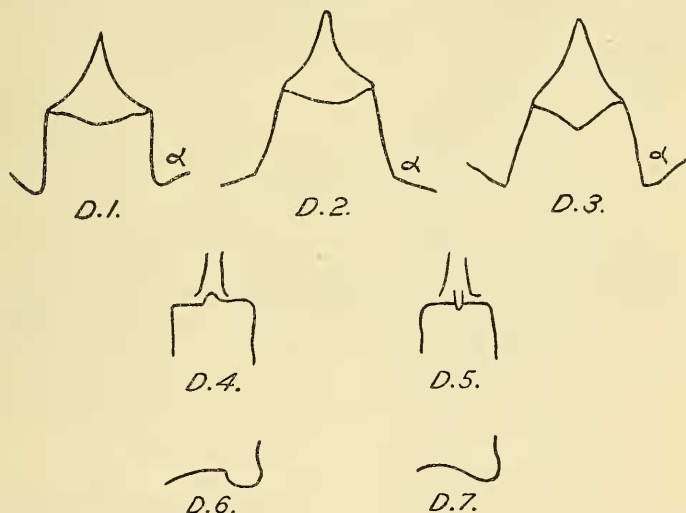


Diagram 1. Temporal shield: Type 1. D.2. Temporal shield: Intermediate type. D.3. Temporal shield: Type 3. D.4. Posterior part of palate: Type 2. D.5. Posterior part of palate: Type 1. D.6. Anterior part of jugal of *M. a. fiona*. D.7. Anterior part of normal jugal.

respects from the primitive type. Steps are being taken to secure specimens from most of the hitherto unvisited islands, and M. A. C. Hinton and I. G. S. Montagu are undertaking a definitive revision of the group. Accordingly, in spite of the incongruous position of many *M. agrestis* forms, no attempt is

made here to define them in conformity with the present estimate of their position. An exception is, however, made in the case of *M. a. fiona* of Gigha since the material representing it is new and undescribed. It is further considered advisable to indicate the lines along which the projected new groupings will be effected.

Group 1.

Temporal shield type 1.

M. a. macgillivrayi. Islay.

Fur colour peculiar; palate type 1; 4th i. a. distinct.

M. a. exsul. Jura.

Fur colour typical; palate type 1; 4th i. a. distinct or vestigial.

Intermediate Group.

Temporal shield intermediate type.

M. a. fiona. Gigha.

Fur colour peculiar; palate type 2; 4th i. a. vestigial; jugal peculiar.

Group 3.

Temporal shield type 3.

Division 1. Palate type 1.

M. a. mial. Eigg.

Fur colour peculiar: 4th i. a. distinct.

M. a. exsul. N. Uist, S. Uist.

Fur colour typical; 4th i. a. distinct.

M. a. exsul. Mull.

Fur colour typical; 4th i. a. distinct or vestigial.

Mixed Division. Palates of both types.

M. a. neglectus. Mainland.

Fur colour typical; 4th i. a. distinct, vestigial, or absent.

Division 3. Palate type 2.

M. a. neglectus. Bute.

Fur colour typical; 4th i. a. distinct, vestigial, or absent.

M. a. exsul. Arran.

Fur colour typical; 4th i. a. distinct or vestigial.

M. a. luch. Muck.

Fur colour peculiar; 4th i. a. distinct, vestigial, or absent.

MICROTUS AGRESTIS FIONA, subsp. n.

Microtus agrestis exsul Barrett-Hamilton & Hinton, P. Z. S. 1913, p. 830 (1).

Habitat. Gigha.

Material examined and Dimensions. One adult (♂) collected by Sheppard in May 1912, six adults (3 ♂, 3 ♀) and two immature specimens (1 ♂, 1 ♀) collected by Hancock and Hutchinson in June and July 1922.

		HB.	T.	HF.	E.
	3. Adult ♂, 1.7.22.	119	39	18	12
Type	5. „ ♂, 2.7.22.	121	35	20	11.5
	9. „ ♂, 2.7.22.	129	38	19	11.5
	1. „ ♀, 30.6.22.	107.	35	19	11
	6. „ ♀, 2.7.22.	113	36	18	12.5
	12. „ ♀, 2.7.22.	117	34	19	12
	13. Immature ♂, 2.7.12.	97	31	19	9
	2. „ ♀, 30.6.22.	97	32	18	9.5
	Average of all adults (7)	118.7	35.7	18.7	11.8

Description. This form is, externally, of peculiar appearance. The long dorsal fur is darkened, and rendered harsh by the profuse abundance in it of long black hairs. There appear to be present in the subspecies two types of ventral surface; this diversity may prove to be a secondary sexual character. Females 1, 12, 2 (imm.) have ventrally only short grey hairs, and exactly resemble in this respect *M. a. macgillivraii*. Males 3, 5, 9, 13 (imm.). 127 and female 6 have, besides the short grey hairs, longer hairs with tips pigmented brighter yellow than those of the typical form, and distributed in similar irregular patches. The character of No. 6 prevents one from formulating a definite opinion of the nature of this diversity until further material is available.

In general body size and dimensions of appendages this form resembles *M. a. exsul*.

The skull shows a temporal shield like that of *M. a. exsul* in its main characters, but resembling that of *M. a. macgillivraii* in certain minor respects. The shield is, further, unique in showing angle α^* greater than 90° ; in all other forms examined this angle is less than 90° . The posterior part of the palate is grooved. The jugal is peculiar in showing in dorsal view an abrupt anterior curve about 3 mm. from its junction with the rostrum. The 4th inner angle of m_1 is distinguishable in all specimens but is never more than vestigial.

* See Diagram 2.